
From: Powers, David
To: Henning, Alan
Sent: 2/20/2013 3:29:09 PM
Subject: Landslides
Attachments: ATTL3T8X.pdf

I may have sent to you already but wanted to make sure you and David Waltz had this e-mail/attachement

From: David Powers [mailto:Powers.David@epamail.epa.gov]
Sent: Thursday, February 14, 2013 3:59 PM
To: SEEDS Joshua; michie.ryan@deq.state.or.us
Cc: foster.eugene@deq.state.or.us; Wu, Jennifer
Subject: Fw: % landscape in high hazard

Josh and Ryan - Whittaker and McShane paper on landslide prone forested areas - addresses efficacy of landslide prone area screening tools. Also provides great bibliography of landslide studies for your lit review with links to many of the studies.

(See attached file: Whittaker-Mcshane Slope instability .pdf)

6. Conclusions

During the December 2007 storm in southwest Washington, the highest landslide density occurred where slope instability screening tools indicated the highest risk of hazard, and the tools were equal in their ability to predict landslide locations. Many landslides initiated on sites identified by the screening tools as unstable, but that had not been identified as unstable through the forest practices review process.

We suggest that the slope instability screening tools we reviewed can be better utilized by forest management planners and regulators to meet policy goals regarding minimizing landslide rates and impacts to sensitive aquatic species. This type of adaptive management will become increasingly important as the Pacific Northwest experiences more frequent and intense storms predicted by climate change models (Dale et al., 2001; Christensen et al., 2007; Karl et al., 2009).

Whats the scope: In general the total area within high risk landslide prone areas that could deliver large wood and sediment to streams should be relatively small and have significant overlap with riparian areas. Burnett and Miller say high risk areas are a "relatively small percentage of the study area" in coastal OR, Montgomery (1998) indicates that 13% of the total area is high hazard in 14 watersheds in OR and WA (I think % with potential to deliver is smaller), and Pacific Watershed Associates found 4% of area to be high hazard in Northern CA.

Source-linkage efforts: No matter how many studies, how much field data, or how many modeling efforts you rely on, you will rarely if ever be able to link a specific management prescription on a specific piece of forestland, to the conditions in a specific reach of stream with a high level of confidence. What you can say is there is strong evidence that clearcutting on steep slopes increases the likelihood of landslides and where landslides are devoid of large wood they impact WQ and fisheries. Robison's landslide work for ODF found that on 75% of the forested sites, clear cutting increased the likelihood of shallow landslides by 200 = 500% after harvest (x to 10 years). Other studies show even higher increased rates than Robison.

If you take the body of scientific evidence that shows clearcutting on high risk landslide prone area can cause NR degradation/WQ impairment, use a reasonable approach to id high risk landslide prone areas likely to deliver to streams, and propose reasonable protection measures based on root strength/precip interception for those sites (with an option for geotech analysis to over ride broad based options) you've got a strong basis for protecting landslide prone areas. I know....easier said than done.

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